3GPP: Myth Versus Reality

Session 717

3GPP: Myth Versus Reality

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Introduction

This session

- Introduces mobile multimedia
- Describes the standards
- Introduces QuickTime's support

Cellular Standards Today

CDMA
GSM
Both

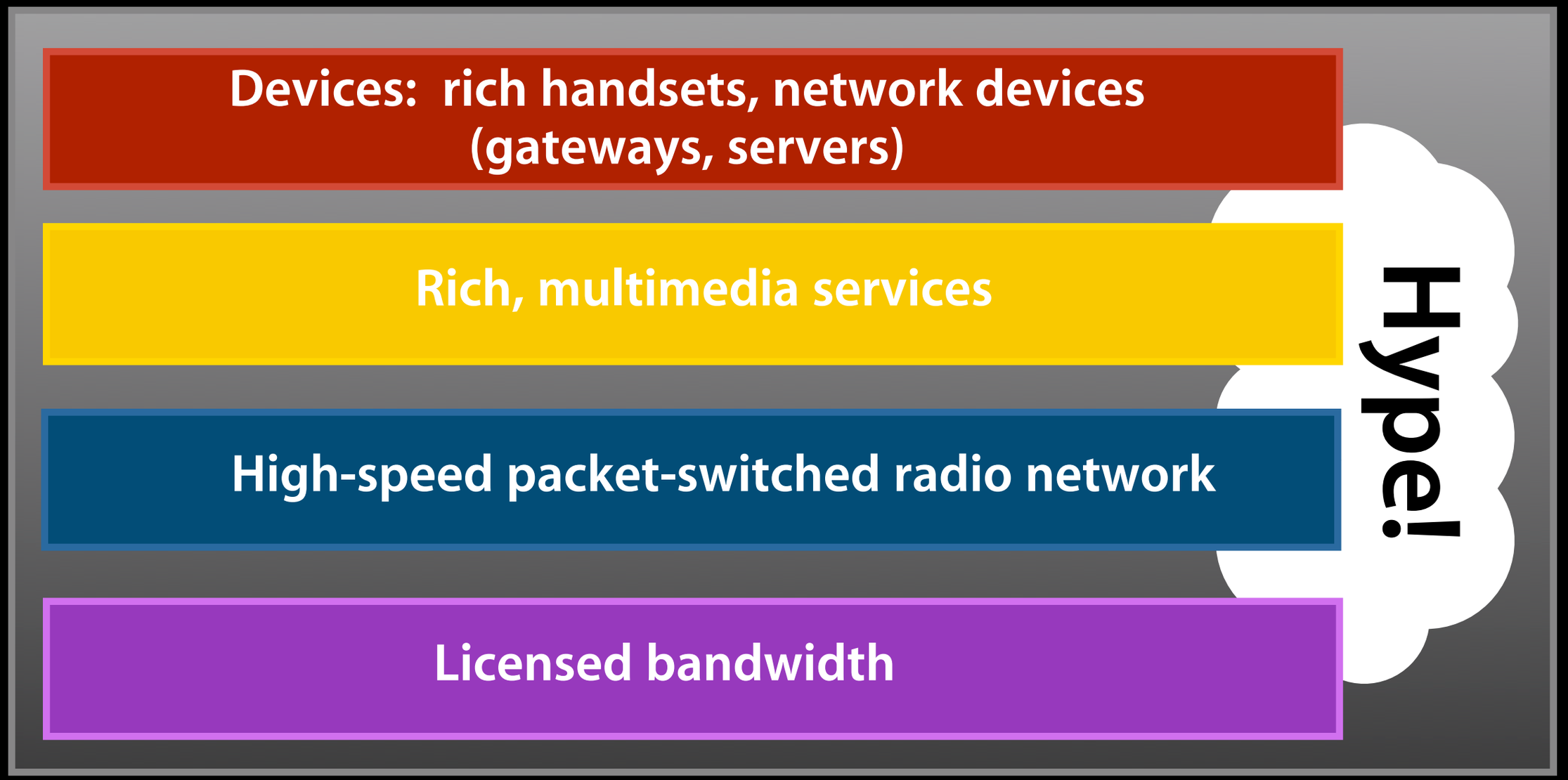
“It’s all over the map...”

Cellular Evolution

The roads to 3G data services

CDMA	GSM	TDMA
cdma2000 1x EV-DV *cdma2000 1x EV-DO*	*UMTS—Europe* *WCDMA—Japan*	*UMTS—Europe* *WCDMA—Japan* *EDGE*
cdma2000 1x	*GPRS*	*GPRS*
cdmaOne	*GSM*	*TDMA* *AT&T*

What Is “3G”?


Devices: rich handsets, network devices
(gateways, servers)
Rich, multimedia services
High-speed packet-switched radio network
Licensed bandwidth
Hype!

“3G” Scepticism

What people are saying

- “…operators…destined for bankruptcy”
- “Is 3G another wireless net disaster?”

Reality

- Services don’t all rely on the complete network
- for instance, download, messaging work on 2/2.5G
- Not everyone went bankrupt!
- Services will lead the network

3G Deployment and Forecasts

"We expect more than 30 [3G] launches to happen in the near term. The commitment of these and other operators to the successful deployment and robust use of WCDMA should not be doubted"

– Rob Conway, CEO of GSM Association at 3GSM World Congress 2003

- Over 100 UTMS licenses granted in 35 countries
- Ovum forecasts 81M users by 2006, 42% in W Europe and 48% in Asia Pacific
- IDC forecasts wireless professional services will grow from $3B to $30B by 2006 with gaming reaching $40B by 2008

What's Relevant to QuickTime

Multimedia handsets

Multimedia services

Radio network

License

- Video playback
- Video record
- Local transfer

- Multimedia messages
- HTTP/Web access
- Streaming

Who Develops 3G Standards?

3GPP

- Builds a “3rd Generation Mobile System based on evolved GSM core networks and the radio access technologies that they support”
- Partnership of several standards bodies
- http://www.3gpp.org/

3GPP2

- Also a partnership
- Mostly N. America and Asia
- Develops similar “cdma2000” network
- http://www.3gpp2.org/

3GPP

Standards-based multimedia goes wireless

- Alliance of telecommunications standards bodies
- Standard for wireless multimedia
- Designed to provide interoperability between high-speed cellular networks and mobile devices
- High-quality at low bit rates for mobile networks

3GPP—The Mobile Standard

Technology leaders adopting 3GPP

- NTT DoCoMo
- Vodafone (including J-Phone)
- Ericsson
- Nokia
- Sony-Ericsson
- Samsung
- NEC
- Panasonic
- Sharp
- Motorola
- Sun Microsystems

What's in 3GPP Multimedia?

- Speech codecs
- General audio codecs
- Video codecs
- Multimedia container file format
- Other parts:
  - Simple profile of SMIL 2.0
  - Midi music
  - Still images: JPEG, GIF, PNG

3GPP Speech Codecs

Adaptive Multi-Rate (AMR)

- "Classic" 8KHz telephony codec
- Adapts to network bandwidth, variable rate (VBR)
- Optimized for speech
- Includes GSM full/half rate codecs as modes
- Also an optional 16KHz wide-band (AMR-WB) codec
- Voice-only (.amr) file format for voice-notes, etc.

3GPP General Audio Codec

Advanced Audio Coding (AAC)

- The leading next-generation general codec
- Simple, base version of MPEG-4 AAC
- As used in iTunes, digital radio mondiale, etc.

3GPP Video Codecs

Two choices

- H.263—widely used over many years
  - 3GPP mandates Profile 0 level 10, allows profile 3
- MPEG-4 video
  - 3GPP allows Simple Profile at Level 0

3GPP Timed Text

Visually-presented text

- Standard based on QuickTime text, simplified
- QuickTime can transcode QuickTime text tracks
- Deployed in NTT DoCoMo's service and handsets
- Features:
  - Sub-titling, links, Karaoke etc.
  - Color and alpha (foreground and background)
  - Scrolling and writing direction (horizontal and vertical)
  - "I-Frame" only

3GPP Multimedia File Format

Container for audio, video, timed text

- Based on the MPEG-4 file format
- Based on the QuickTime file format
- Familiar “moov” atom
- Includes the intrinsic “file-type” atom
  - Introduced in JPEG 2000
  - Identifies specifications to which file complies

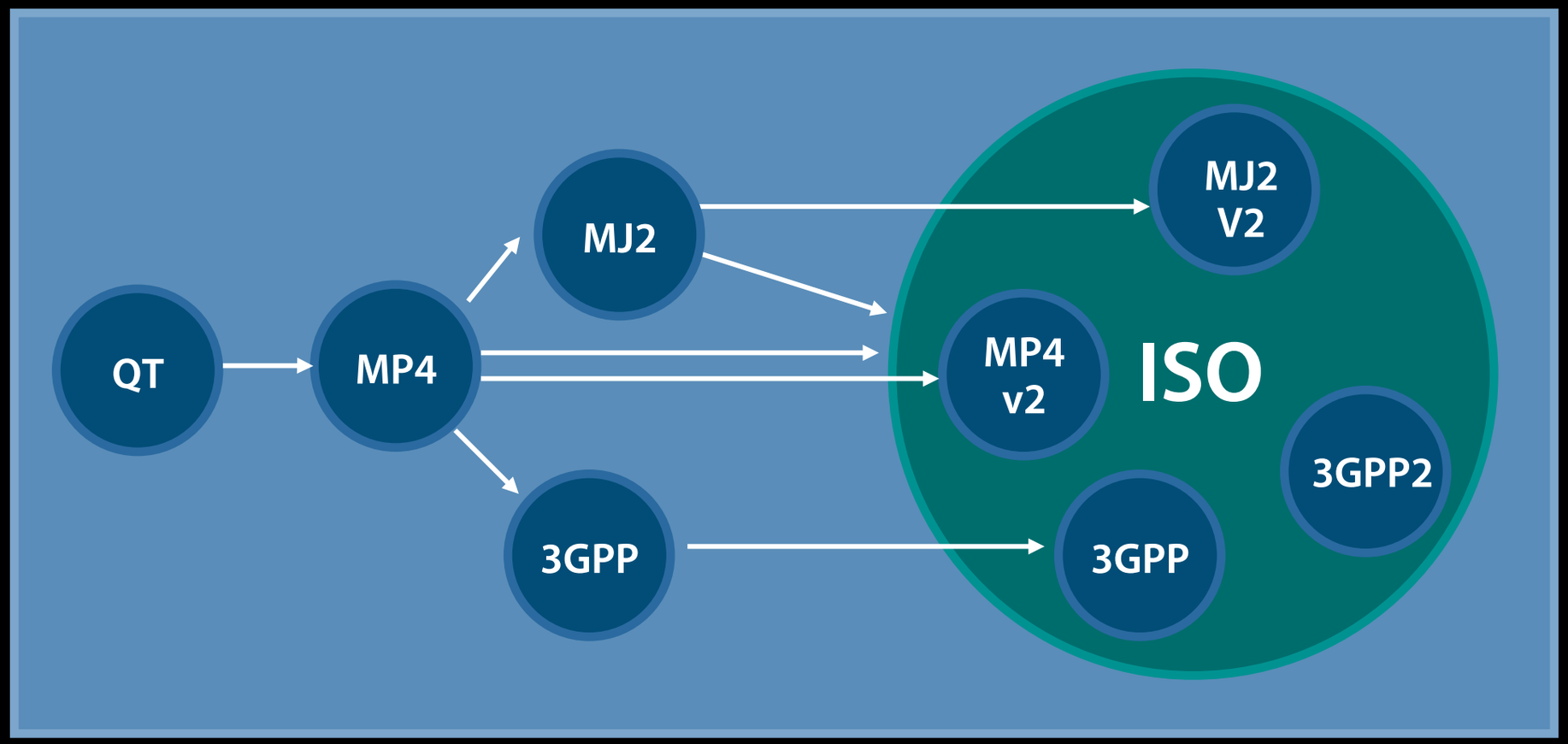
3GPP2 Multimedia

Used in USA, Asia

- Uses different codecs:
  - e.g. QCELP (PureVoice) for speech
  - Layer3 (MP3) for general audio
- But uses 3GPP2 file format, also based on MPEG-4

3G File formats

File format evolution



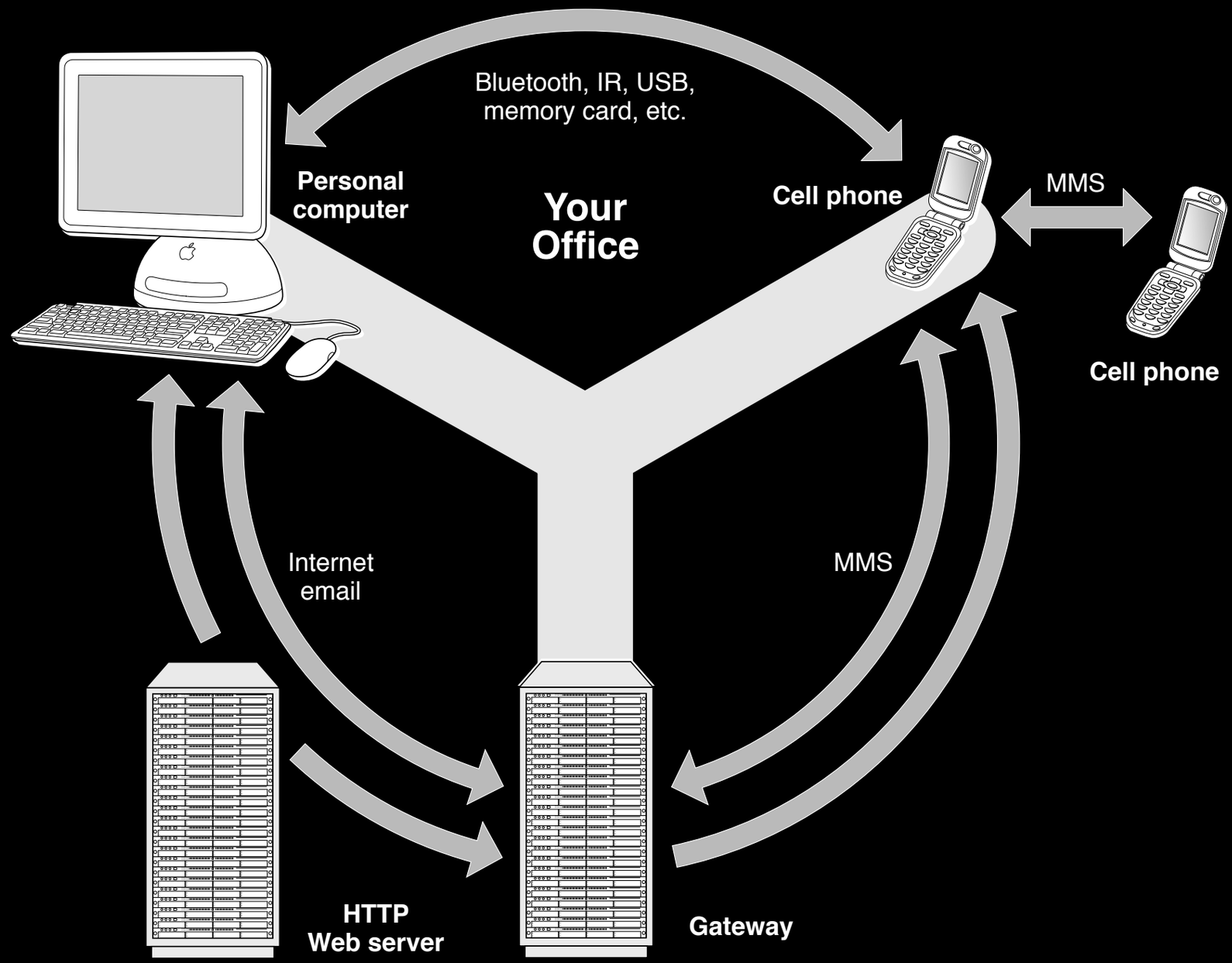
State of the Standards

3GPP and 3GPP2

- Mature set of standards
  - 3GPP 26.234 base for multimedia
- Formats, protocols
- Messaging, download, streaming…
- Download and message today
- But…streaming will lag download
- Upcoming standard: one-many (multicast)

Multimedia and Your Phone

Data flow



QuickTime 6.3

The first mainstream mobile multimedia solution

- Native 3GPP support:
  - AAC and AMR audio
  - MPEG-4 and H.263 video
  - 3G Text (TX3G)
  - .3gp file format
- Playback of .amr and .sdv files
- Automatic detection of streaming transport

QuickTime's Place in 3GPP

- First widely distributed 3GPP player for the desktop
- First low-cost, feature-rich 3GPP authoring tool
- Tool of choice for the world's first standard-based 3G network service, NTT DoCoMo's Mobile MP4 i-motion

3GPP In Action

Professionals create content for subscription services

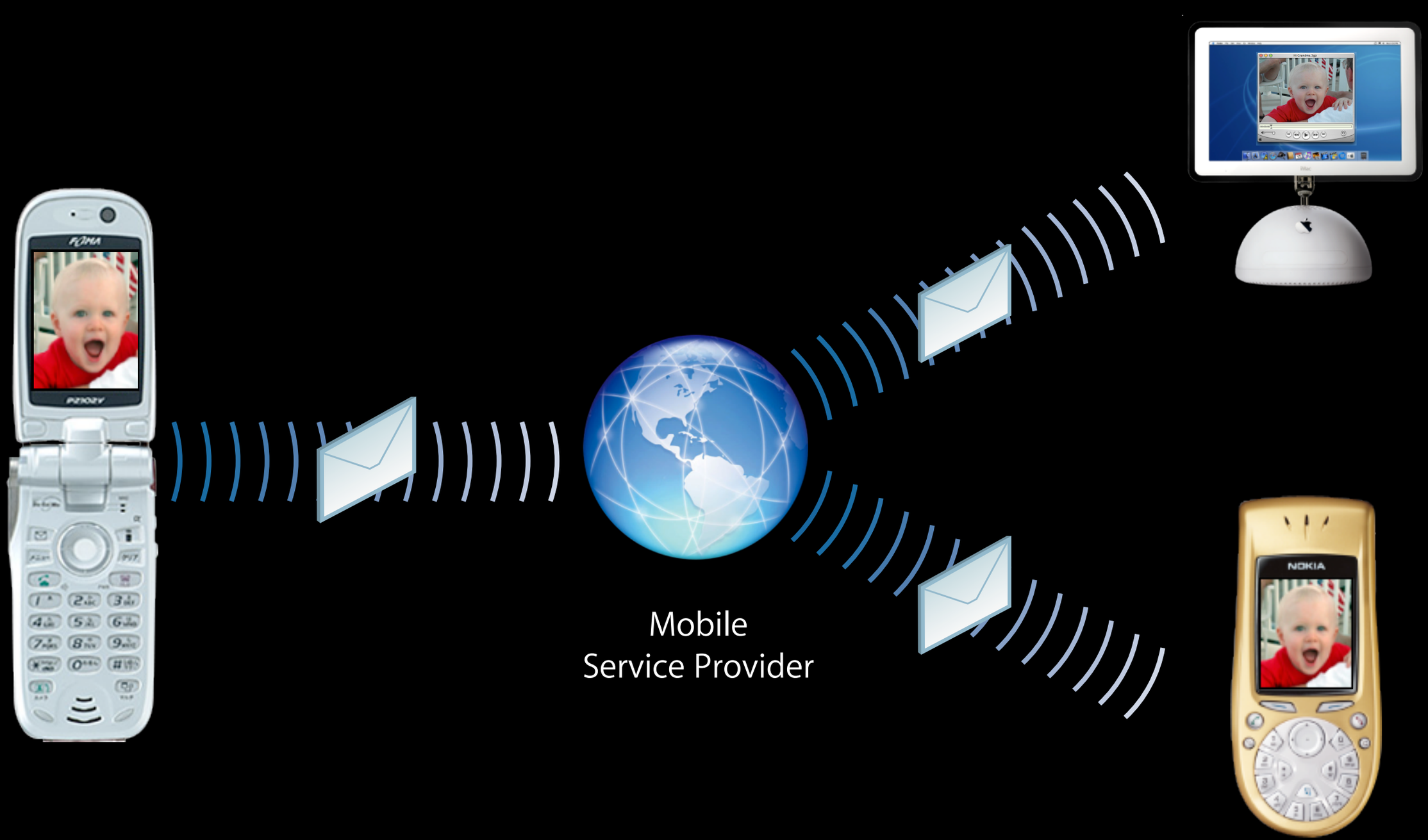
Professional
Content Providers

Mobile
Service Provider

Mobile
Phone

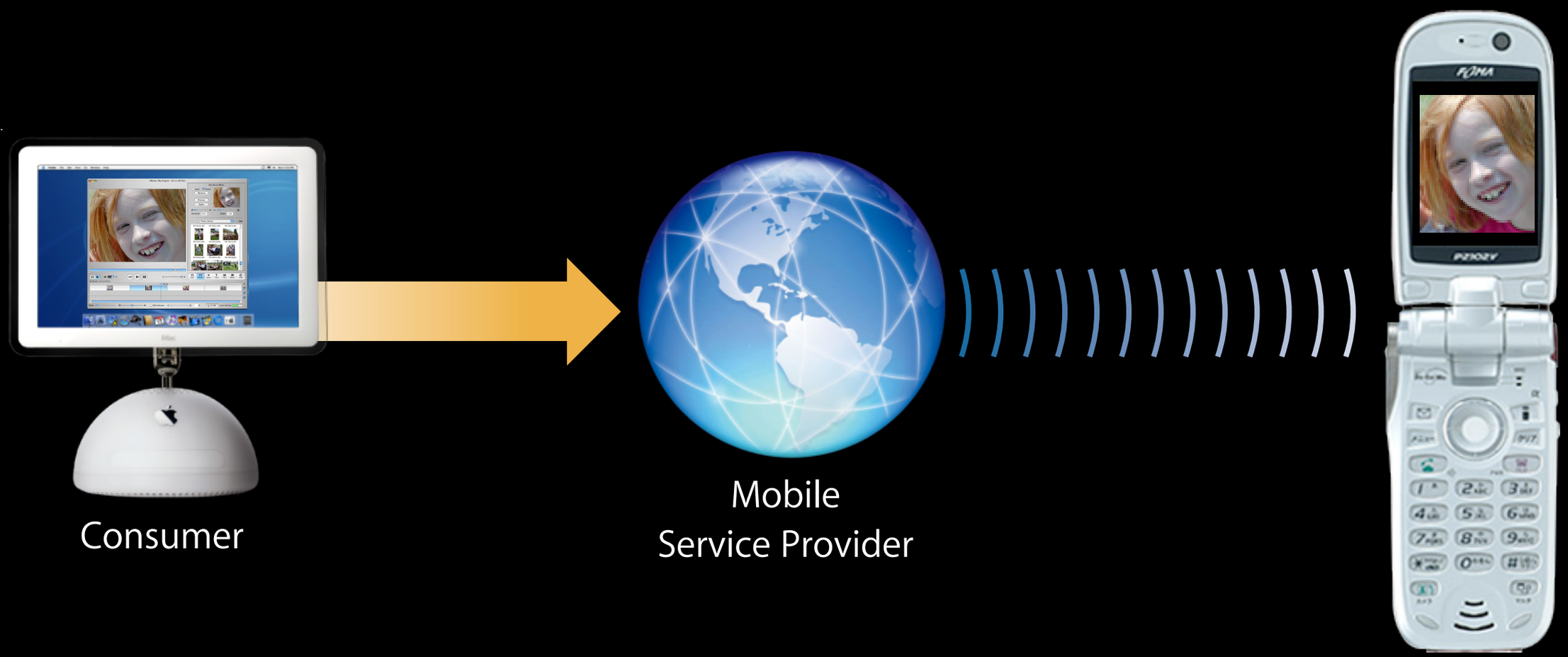
3GPP In Action

Consumers create content to share with others



3GPP Evolution

Consumers create content to share with others



Consumer

Mobile
Service Provider

Mobile
Phone

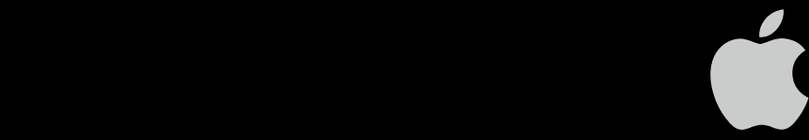
MPEG-4 and 3GPP Ready

Tools built on QuickTime inherit MPEG-4 and 3GPP automatically

Markets for QuickTime Developers

Create tools in QuickTime for:

- Operators
  - Content creation, management
- Content owners
  - Authoring, transcoding
- End users
  - Content creation, use, integration
- General integration (SMIL, MMS, etc)



Opportunities: Japan

- $1.3B Wireless Streaming Revenue in 20041
- NTT DoCoMo:
  - QuickTime partner
  - 3GPP-compliant handsets
  - Full 3G service
- J-Phone
  - 3GPP-compliant handset
  - Successful 2.5G Movie Sha-mail service
  - Moving aggressively toward 3G

Source 1: Datacomm Research Company 2001

Opportunities: Europe

- $600M Wireless Streaming Revenue in 2004[1]
- Variety of 3GPP compliant handsets
- 3G launched services with Hutchison in UK, Sweden, Italy, and Australia

Source 1: Datacomm Research Company 2001

Opportunities: USA

- $1.7B Wireless Streaming Revenue in 2004[1]
- T-Mobile, Cingular, AT&T Wireless

  …all ship the Nokia 3650

  …with varying services

  …(and coverage)

Source 1: Datacomm Research Company 2001

Beyond 3G?

- "4G"
  - High-speed radio data networks
  - Technology more like 802.11 family
  - Reach more like cellular
- Very different cost and deployment model
- More data-centric than the traditional cell phone networks
- Good news for those in the multimedia/ computing world

Demo

http://developer.apple.com/wwdc2003/urls.html

For More Information

Online Information

- QuickTime 6.3 3GPP support
  - http://www.apple.com/mpeg4/3gpp/
- 3GPP Specifications
  - http://www.3gpp.org/
    - AMR, 3GP file format (26.234)
- MPEG-4 specifications
  - 14496-X, buy from http://www.iso.ch/
- ITU specifications (H.263)
  - http://www.itu.int/

Related Technologies

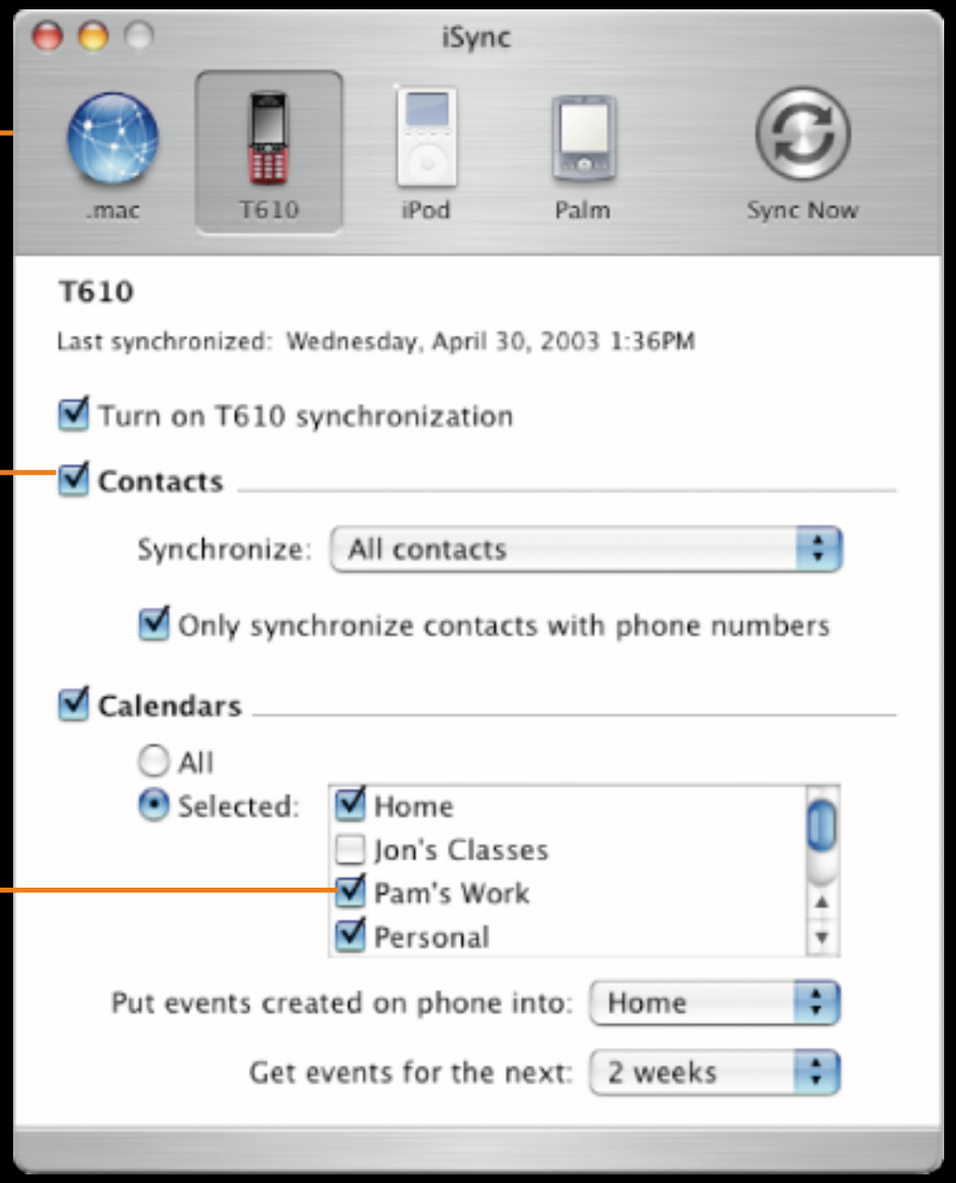
iSync

Up-to-date information, everywhere, all the time

One application supports multiple devices

Synchronize your contacts

Synchronize your calendars



iSync 1.1 is available via Internet download and requires Mac OS X v10.2.5.
Internet access requires a compatible ISP; fees may apply.

Bluetooth

Simple, secure, versatile, reliable

Wireless keyboard
and mouse

HotSync, iSync,
business card exchange

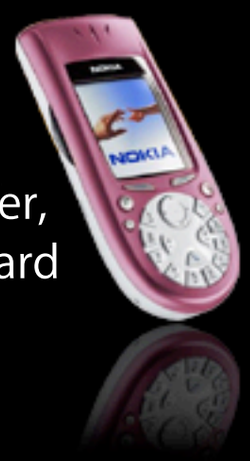


Image transfer,
instant postcard

iCal, iSync,
Address Book,
Internet access

File transfer

File transfer

Wrap Up

Roadmap—Wednesday

	Russian Hill	Pacific Heights	Haight/ Ashbury	SOMA
9:00	711 Audio and QuickTime		712 QuickTime for the Web	713 Introduction to QuickTime Interactivity
10:30			714 Large-Scale Webcasting: Macworld Keynote Case Study	715 QuickTime Interactivity Tools
12:00				
2:00	716 Advanced QuickTime Programming Techniques		717 3GP: Myth Versus Reality	718 AppleScript and QuickTime
3:30			719 Administering QuickTime Streaming Server	720 Content Creation for Mobile Phones: Top 10 Success Factors
5:00			721 WiFi and 3G: Let the Games Begin	722 Advanced QuickTime Interactivity

Roadmap—Thursday

	The Mission	Haight/ Ashbury	SOMA
9:00		723 The Real Story About MPEG-4 Visual Licensing	724 What's New With QuickTime VR?
10:30		725 QuickTime and Enhanced CDs	726 Cutting-Edge Projects Using QuickTime VR
12:00			
2:00	727 QuickTime Streaming Server Programming	728 Produce a Listening Party With QuickTime	729 Industrial-Strength Encoding
3:30		FF011 QuickTime Feedback Forum	
5:00			

Roadmap—Friday

	Pacific Heights	The Marina
9:00		
10:30	730 QuickTime Alternative Programming Environments	
12:00		
2:00		731 Internet Application Development: The New Frontier
3:30		
5:00		

Who to Contact

Guillermo Ortiz
QuickTime Technology Manager
quicktimeman@apple.com

http://developer.apple.com/wwdc2003/urls.html

For More Information

Documentation

General Information

http://www.apple.com/quicktime

Developer Information

http://developer.apple.com/documentation

QuickTime Information

http://developer.apple.com/QuickTime

Do Not Miss!

Lab: QuickTime Content Creation

Meet with QuickTime content experts for daily content specific topics that are of special interest to you. Bring your own media and PowerBook. No appointment is needed—first-come, first-served.

Sacramento Room

Lab: QuickTime Development

Meet with Apple's QuickTime engineers. Each day will emphasize a specific QuickTime development topic. Bring your own code and PowerBook. No appointment is needed—first-come, first-served.

Sacramento Room

Lab Hours

Monday	12:00pm to 6:00pm
Tuesday	9:00am to 6:00pm
Wednesday	9:00am to 6:00pm
Thursday	9:00am to 4:30pm
Friday	9:00am to 6:00pm

Q&A

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WWDC 2003

Worldwide Developers Conference